

Jetson TK1 expansion board specification

ver: v1.1

Version history:

Version	Description	Author	Remark
V1.0	New file	ZhangJianjun	For tk1_exp02 PCB
V1.1	Change cam2 data lane	ZhengYong	For tk1_exp03 PCB

1. Summary

tk1exp is a full function expansion board for Jetson tk1. Follow is diagram.

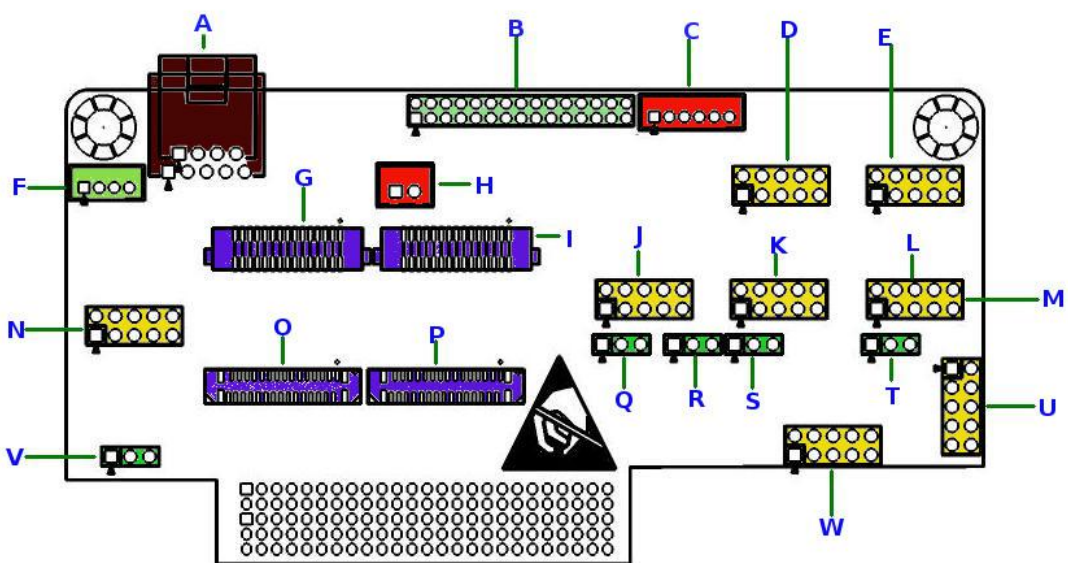


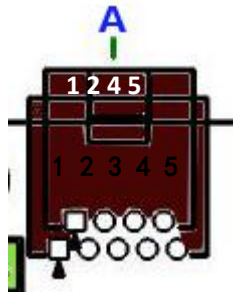
Figure 1

Label	Description	Remark
A	Touch screen interface	
B	LCD interface	
C	LCD backlight power	
D	BR_UART1(RS-232 level)	
E	UART2 RS-232(RS-232 level)	
F	AD input	
G	Raspberry PI camera 1	
H	Vmux	
I	Raspberry PI camera 2	
J	GPIO_PU0~PU6 3.3V or 5V level	Set logic level by Q and R
K	I2C 3.3V or 5V level	Set logic level by S

L	BR_UART1 3.3V or 5V level	Set logic level by T
N	TS_SPI 3.3V or 5V level	Set logic level by V
O	Camera 1 CSI-2	Only clk, lan0 and lan1, lan2 and lan3 on the P
P	Camera 2 CSI-2	
Q,R,S,T,V	IOlogic level jumper, In the Figure 1, jumper to left for 5V, and right for 3.3V	
U	UART2 3.3V or 5V level	
W	Reset, power key, HSIC etc.	

2. Interface Description

2.1. Touch Screen



Pin Number	Description	remark
1	X+ for 4-wires touch screen, UL for 5-wires touch screen	
2	X- for 4-wires touch screen, LL for 5-wires touch screen	
3	COMMON for 5-wires touch screen	
4	Y- for 4-wires touch screen, LR for 5-wires touch screen	
5	Y+ for 4-wires touch screen, UR for 5-wires touch screen	

2.2. LCD

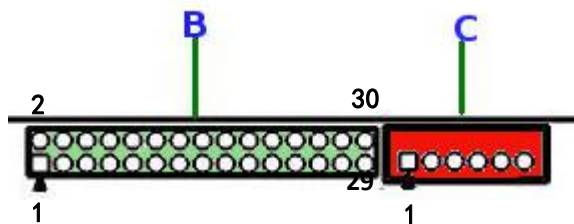


Table 1 B pin list

Pin	Name	Description	remark
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number			
1	LCD_VCC	LCD power	
2	LCD_VCC	LCD power	
3	LCD_VCC	LCD power	
4	GND	LCD GND	
5	GND	LCD GND	
6	E_GND	Edp GND	
7	EDP_D2N	D2- for eDP mode	
8	EDP_D2P	D2+for eDP mode	
9	EDP_D1N	D1-for eDP mode	
10	EDP_D1P	D1+for eDP mode	
11	EDP_D0N	D0-for eDP mode	
12	EDP_D0P	D0+for eDP mode	
13	E_GND	eDP GND	
14	E_GND	Edp GND	
15	EDP_D3N	D3-for eDP mode	
16	EDP_D3P	D3+for eDP mode	
17	NC	Not connect	
18	NC	Not connect	
19	EDP_AUXN	AUX-for eDP mode	
20	EDP_AUXP	AUX+for eDP mode	
21	EDP_HDP	HDP for eDP mode	
22	LCD_BL_EN	LCD backlight enable, active high	
23	LCD_BL_PWM	LCD backlight PWM	
24	BL_GND	LCD backlight power GND	
25	BL_GND	LCD backlight power GND	
26	BL_GND	LCD backlight power GND	
27	BL_VCC	LCD backlight power	
28	BL_VCC	LCD backlight power	
29	BL_VCC	LCD backlight power	
30	BL_VCC	LCD backlight power	

Table 2 LCD backligt power

Pin number	Name	Description	remark
1	BL_VCC	LCD backlight power	
2	BL_VCC	LCD backlight power	
3	LCD_BL_EN	LCD backlight enable, active high	
4	LCD_BL_PWM	LCD backlight PWM	
5	BL_GND	LCD backlight power GND	
6	BL_GND	LCD backlight power GND	

2.3. UART

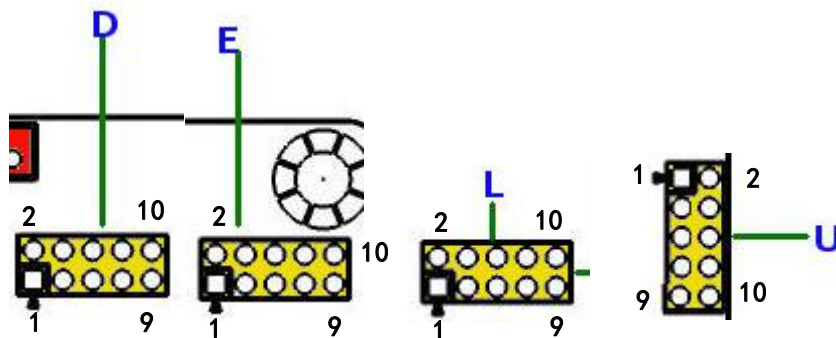


Table 3 D connector

Pin number	Name	Description	remark
1	NC	Not connect	
2	RXD	RS-232 RXD	
3	TXD	RS-232 TXD	
4	NC	Not connect	
5	GND	RS-232 GND	
6	NC	Not connect	
7	NC	Not connect	
8	NC	Not connect	
9	NC	Not connect	
10	NC	Not connect	

Table 4 E connector

Pin number	Name	Description	remark
1	NC	Not connect	
2	RXD	RS-232 RXD	
3	TXD	RS-232 TXD	
4	NC	Not connect	
5	GND	RS-232 GND	
6	NC	Not connect	
7	RTS	RS-232 RTS	
8	CTS	RS-232 CTS	
9	NC	Not connect	
10	NC	Not connect	

Table 5 L connector

Pin number	Name	Description	remark
1	UART_VCC	Power, 3.3V or 5V	
2	RXD	TTL RXD	

3	TXD	TTL TXD	
4	NC	Not connect	
5	GND	GND	
6	NC	Not connect	
7	NC	Not connect	
8	NC	Not connect	
9	NC	Not connect	
10	NC	Not connect	

Table 6 U connector

Pin number	Name	Description	remark
1	UART_VCC	3.3V or 5V	
2	RXD	TTL level RXD	
3	TXD	TTL level TXD	
4	NC	Not connect	
5	GND	GND	
6	NC	Not connect	
7	RTS	TTL level RTS	
8	CTS	TTL level CTS	
9	NC	Not connect	
10	NC	Not connect	

2.4. Camera connector

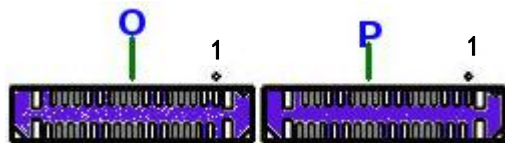


Table 7 O connector

Pin number	Name	Description	remark
1	GND	CSI2 GND	
2	CSIA_D0N	CSI2 A D0-	
3	CSIA_D0P	CSI2 A D0+	
4	GND	CSI2 GND	
5	CSIA_D1N	CSI2 A D1-	
6	CSIA_D1P	CSI2 A D1+	
7	GND	CSI2 GND	
8	CSIA_CLKN	CSI2 A CLK-	
9	CSIA_CLKP	CSI2 A CLK+	

10	GND	CSI2 GND	
11	CAM1_GPIO	CAM1_GPIO	
12	CAM1_MCLK	CAM1_MCLK	
13	GND	CSI2 GND	
14	CAM_I2C_SCL	CAM_I2C_SCL	
15	CAM_I2C_SDA	CAM_I2C_SDA	
16	CAM1_PWDN	CAM1 power down	
17	CAM_RST_L	Camera reset, active low	
18	CAM_FLASH	CAM_FLASH	
19	CAM1_AF_PWDN	CAM1_AF_PWDN	
20	GND	CSI2 GND	
21	+1.8V_RUN_CAM	Camera power	
22	GND	GND	
23	+2.8V_RUN_CAM_AF	Camera power	
24	GND	GND	
25	+1.2V_RUN_CAM_FRONT	Camera power	
26	GND	GND	
27	+2.8V_RUN_CAM	Camera power	
28	GND	GND	
29	+1.05V_RUN_CAM_REAR	Camera power	
30	GND	GND	

Table 8 P connector

Pin number	Name	Description	remark
1	GND	CSI2 GND	
2	CSIE_D0N	CSI2 E D0-	
3	CSIE_D0P	CSI2 E D0+	
4	GND	CSI2 GND	
5	CSIB_D0N	CSI2 B D0-	
6	CSIB_D0P	CSI2 B D0+	
7	GND	CSI2 GND	
8	CSIE_CLKN	CSI2 E CLK-	
9	CSIE_CLKP	CSI2 E CLK+	
10	GND	CSI2 GND	
11	CAM2_GPIO	CAM2_GPIO	
12	CAM2_MCLK	CAM2_MCLK	
13	GND	CSI2 GND	
14	CAM_I2C_SCL	CAM_I2C_SCL	
15	CAM_I2C_SDA	CAM_I2C_SDA	
16	CAM2_PWDN	CAM2 power down	

17	CAM_RST_L	Camera reset, active low	
18	CAM_FLASH	CAM_FLASH	
19	CSIB_D1N	CSI2 B D0-	
20	CSIB_D1P	CSI2 B D0+	
21	+1.8V_RUN_CAM	Camera power	
22	GND	GND	
23	+2.8V_RUN_CAM_AF	Camera power	
24	GND	GND	
25	+1.2V_RUN_CAM_FRONT	Camera power	
26	GND	GND	
27	+2.8V_RUN_CAM	Camera power	
28	GND	GND	
29	+1.05V_RUN_CAM_REAR	Camera power	
30	GND	GND	

2.5. GPIO connector

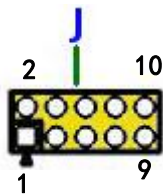


Table 9 J connect

Pin number	Name	Description	remark
1	+5V	+5V power	
2	GPIO_PU0	GPIO_PU0, Set logic level(3.3V or 5V) by Q	
3	GPIO_PU1	GPIO_PU1, Set logic level(3.3V or 5V) by Q	
4	GPIO_PU2	GPIO_PU2, Set logic level(3.3V or 5V) by Q	
5	GND	GND	
6	GPIO_PU3	GPIO_PU3, Set logic level(3.3V or 5V) by Q	
7	GPIO_PU4	GPIO_PU4, Set logic level(3.3V or 5V) by R	
8	GPIO_PU5	GPIO_PU5, Set logic level(3.3V or 5V) by R	
9	GPIO_PU6	GPIO_PU6, Set logic level(3.3V or 5V) by R	
10	NC	Not connect	

2.6. I2C connector

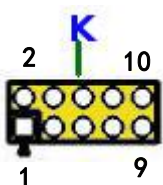


Table 10 K connector

Pin number	Name	Description	remark
1	+5V	+5V power	
2	NC	Not connect	
3	PWR_I2C_SCL	PWR_I2C_SCL, Set logic level(3.3V or 5V) by S	
4	PWR_I2C_SDA	PWR_I2C_SDA, Set logic level(3.3V or 5V) by S	
5	GND	GND	
6	GEN1_I2C_SCL	GEN1_I2C_SCL, Set logic level(3.3V or 5V) by S	
7	GEN2_I2C_SCL	GEN2_I2C_SCL, 3.3V ONLY	
8	GEN1_I2C_SDA	GEN1_I2C_SDA, Set logic level(3.3V or 5V) by S	
9	GEN2_I2C_SDA	GEN2_I2C_SDA, 3.3V ONLY	
10	NC	Not connect	

2.7. SPI connector

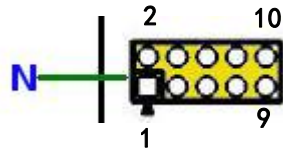


Table 11 N connector

Pin number	Name	Description	remark
1	TS_VDD	Set voltage (3.3V or 5V) by V	
2	TS_SPI_SCK	TS_SPI_SCK, Set logic level(3.3V or 5V) by V	
3	TS_SPI_MOSI	TS_SPI_MOSI, Set logic level(3.3V or 5V) by V	
4	TS_SPI_CS_L	TS_SPI_CS_L, Set logic level(3.3V or 5V) by V	
5	GND	GND	
6	TS_SPI_MISO	TS_SPI_MISO, Set logic level(3.3V or 5V) by V	
7	TS_SPI_RESET	TS_SPI_RESET, Set logic level(3.3V or 5V) by V	
8	TS_SPI_SHDN	TS_SPI_SHDN, Set logic level(3.3V or 5V) by V	
9	TS_SPI_PK2	TS_SPI_PK2, Set logic level(3.3V or 5V) by V	

10	TS_CLK	TS_CLK, Set logic level(3.3V or 5V) by V	
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2.8. Other connector

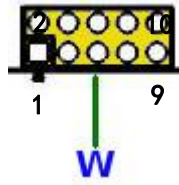


Table 12 W connector

Pin number	Name	Description	remark
1	HSIC1_STROBE	HSIC1_STROBE	
2	HSIC1_DATA	HSIC1_DATA	
3	CLK3_OUT	CLK3_OUT	
4	+1.8V_GEN_AVDD	+1.8V_GEN_AVDD	
5	GND	GND	
6	ONKEY_L	Power key	
7	PMU_RESET_IN_L	Reset	
8	GND	GND	
9	FORCE_RECOVERY_L	FORCE_RECOVERY_L	
10	NC	Not connect	